DOCUMENT RESUME

ED 095 520 CS 001 332

AUTHOR Schumacher, Gary M.; And Others
TITLE Textual Organization, Advance Organizers and the Retention of Prose Material.
PUB DATE Apr 74
NOTE 14p.; Paper presented at the Annual Meeting of the American Educational Research Assn. (Chicago, April 15-19, 1974)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS College Students; *Prose; Reading; Reading Ability; *Reading Comprehension; Reading Improvement; Reading Materials; *Reading Research; *Reading Skills
IDENTIFIERS *Advance Organizers

ABSTRACT

The purpose of this study was to investigate the interrelationship between passage organization and the presence or absence of advance organizers. Two sets of stimulus materials were used. One set consisted of six paragraphs, each of which described the important events in the administration of one obscure American president. The second set of materials contained the same content. However, transitions were added between paragraphs. There were six forms of each set of materials, with each form providing a different order of presidents. The advance organizer was a short, one paragraph statement pointing out how the passage was organized. The subjects were 144 male and female undergraduate college students, randomly assigned to one of the six presidential orderings in one of the advanced organizer groups under either a whole or part condition. Upon completion of reading the material the subjects were administered a 24-item recall test, with four items on each president. Three factors were analyzed: absence of the advance organizer, type of paragraph organization (part or whole), and serial position. The results indicated that the main effect for paragraph organization was significant with subjects performing better under the whole condition than under the part condition. (WR)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

21 02
14

TEXTUAL ORGANIZATION, ADVANCE ORGANIZERS AND THE RETENTION OF PROSE MATERIAL

ED 095520

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
Gary M. Schumacher
Dale Liebert
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

Gary M. Schumacher[1]
Dale Liebert
Warren Fass
Ohio University

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
Warren Fass
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

An active area of research recently has been the investigation of the role of passage organization on the amount and type of information recalled from prose passages. Both Frase (1969) and Freidman and Greitzer (1972), for example, have studied the effect on prose retention of manipulating name versus attribute organization of passages. Meyer and McConkie (1973) have noted that measures of passage organization are highly related to the recall of material from a prose passage. Di Vesta and Gray (1973) scrambled the order of paragraphs of material and significantly altered the subjects' ability to recall. Finally in some pilot work of our own it has been found that presenting paragraphs of prose material in separate paragraphs on successive pages in contrast to one long paragraph led to less efficient retention of the material.

With few exceptions no systematic rationale or procedure has been generated for the exploration of the interaction of such organizational characteristics with other variables thought to influence prose retention. It is quite possible that the influence of passage organization on recall will be modulated by other variables.

One such variable which logically might be expected to interact with passage organization is information given to the subject about the structure of the passage; in particular, advance organizers. According to Ausubel (1960) advance organizers provide subjects with information about a passage which helps the subject relate the information in the passage to what the subject already knows.

CS 001 332

The advance organizers are usually thought to provide subjects with higher level structural information which helps the subject interpret, understand and remember the passage. Inconsistent results from studies on advance organizers suggest that the specific conditions under which organizers are beneficial have yet to be determined. Specifically in passages where the structure is evident and simple, advance organizers may be redundant and hence unimportant.

The object of this study was to investigate the interrelationship between passage organization and the presence or absence of advance organizers. In particular it was postulated that the presence of an advance organizer would significantly improve the recall of a passage organized into one long passage with no paragraph breaks. Such a passage organization does not provide the subject with paragraph cues which he can use in aiding recall. The advance organizers should provide this information in another fashion.

In passages broken into paragraphs however the subject does have structural information available and the advance organizers should be of little added benefit. This predicted interaction may be seen graphically in Figure 1.

Insert Figure 1 about here

Two factors were employed to increase the generalizability and validity of this study. First, a passage was generated which closely typifies passages found in textbooks. Many studies investigating the affect of passage organization have employed passages which are markedly simple in form. These passages frequently involve lists of fictional objects (for example, planets) with a list of attributes for each object. Such materials may bring out different strategies than are seen with more natural materials.

Second, since organizational factors in word list studies have been found to primarily influence recall measures rather than recognition measures, a recall measure was employed in this study. This should allow for better determination of the influence of passage organization and advance organizers.

Method

Subjects

One hundred forty four male and female undergraduate college students served as subjects. They were volunteers who were given course credit for participation.

Stimulus Materials

Two sets of stimulus materials were used. One set consisted of six paragraphs with each paragraph describing the important events in the administration of one obscure American president. These six paragraphs contained a total of 598 words and had a mean sentence length of 13.9 words. The second set of material contained the same content, however transitions were added between paragraphs. The resulting single paragraph contained 616 words and a mean sentence length of 14.3 words.

There were six forms of each set of materials, with each form providing a different order of presidents. This allowed each president to be in every position, thus providing a counterbalance for order of presentation.

The advance organizer was a short one paragraph statement pointing out how the passage was organized. It was more general than the actual passage and included no specific information which was also included in the passage. The recall test contained 24 items, with four items on each president. Subjects were required to fill in a name or simple phrase for each item.

Design

A 2 x 2 x 6 factorial design with repeated measures on the last factor was employed. The first factor was the presence or absence of the advance organizer, the second was associated with the type of paragraph organization (Part vs. Whole); and the third was serial position.

Procedure

The subjects were randomly assigned to one of the six presidential orderings in one of the advanced organizer groups under either the whole or part condition. The subjects were run in groups of six or less at a time. When all subjects were present, the instructions and reading material were passed out. The instructions specified that the subjects had ten minutes to read the material and if they finished before the time was up, they should reread the material. They were further instructed that upon completion of reading the material, they would be tested on the contents of the material. Upon completion of the reading time, the recall test was presented.

Results

An analysis of variance was performed on the recall scores. Results indicated that the main effect for paragraph organization (Part-Whole) was significant ($F=6.578$, $df=1/120$, $p<.02$) with subjects performing better under the Whole condition than under the Part condition. The means were respectively 12.36 and 10.14. The interaction between advance organizer and paragraph organization was also significant ($F=4.603$, $df=1/120$, $p<.05$) and is shown graphically in Figure 2.

Insert Figure 2 about here

Further analysis of this interaction showed that the main effect for para-

graph organization was primarily due to the difference between the two types of paragraph organization when an advance organizer was not present. The whole condition led to significantly better recall than the part condition with no advance organizer present.

The serial position main effect (see Figure 3) was also significant ($F=2.57$, $df=5/600$, $p<.03$).

Insert Figure 3 about here

A Newman-Keuls test was performed on the means and results indicated that serial position one differed significantly from serial position five ($p<.01$) and serial position four ($p<.05$); serial position two differed from serial position five ($p<.05$).

Discussion

The results from this study indicate that paragraph organization and advance organizers do interact with one another, but not in the way predicted. It had been postulated that the worst condition for subjects would be whole organization with no advance organizer since these subjects were neither given an advance organizer nor a good passage structure. Hence the fact that this condition was better than the part condition with no advance organizer and certainly not worse than either advance organizer condition necessitates explanation.

Before attempting an explanation it is worthwhile noting two observations. Frase (1969) commented somewhat casually at the beginning of his article that poor organization of a prose passage might lead to the best retention. This somewhat startling comment would have been dismissed had it not coincided so well with our findings. The issue was raised strikingly again in Di Vesta and Gray's

(1973) recent finding that their scrambled passage was remembered significantly better than a completely logical ordering of the passage. While they explained their finding as due to release from proactive inhibition the general argument we will now advance would also account for their finding.

There has been a growing group of memory theorists who have been suggesting that memory is best conceptualized as applied cognition. That is, rather than viewing memory as a separate and distinct process it is viewed as the application of several cognitive processes to the retention of information. Flavell (1970) translated a statement from Piaget as follows:

> "In the broad sense, memory....is just another mode of knowledge....a mode of knowleige that is not concerned with present data, as is perception, nor with the solution of new problems, as is intelligence in its specific function, but with the structuring and reconstitution of the past." (Piaget, et. al. 1968, p. 441).

In other words memory is an epiphenomenon or a resultant of certain cognitive activities or processes which the organism carries out so that it will be able to remember later. This point of view has been expressed in many different ways. Developmental memory theorists such as Meacham (1972) and Corsini (1971) as well as a main body of the Russian memory community (Smirnov and Zinchinko, 1969) have argued in their memory studies for the importance of the particular activities which subjects are made to carry out. Mandler (1967) in adult memory studies has shown that subjects asked to carry out certain appropriate activities such as classification tasks but not warned of the subsequent recall test remembered the words as well as subjects who were told of the impending recall test. The numerous studies by Jenkins and his colleagues (for example, Hyde and Jenkins,

1973) have shown that the nature of the cognitive tasks which leads to good recall is their semantic properties. Finally Frase (1969) found that varying passage organization required subjects to vary their information processing activities; as a result subjects retained some passage content better than others.

This last study suggests a particular explanation for the results we have described above and also possibly the results of Di Vesta and Gray (1973). When subjects are given no organizational information in the form of advance organizers or structural passage construction (whole condition) they are forced to carry out activities aimed at generating their own structure for the passage presented. These activities lead to efficient recall, recall that is significantly better than when no advance organizers are given and structural passage information is given (part condition). Two possibilities exist to explain this difference. First subjects under the Whole-No Advance Organizer condition carry out more extensive activities or carry out different activities. While we can't rule out entirely either possibility the fact that time of presentation was controlled tends to favor the latter explanation.

When organizational information regarding the passage is given in the form of advance organizers, recall is intermediate regardless of the whole-part manipulation. Although these recall scores were not significantly different from either of the extreme groups discussed above, they fall in a pattern consistent with data reported by Smirnov and Zinchenko (1969). These authors report that subject-generated plans for a passage lead to better recall than does an experimenter-generated plan. The advance organizers are in effect an experimenter-generated plan. Indeed the part organization could also be thought of as an experimenter-generated plan, but apparently a very poor one.

In general then these data support the importance of subject activity in

the retention of prose material. This activity seems to be tied to the subject's goal of developing an organization or structure for the prose material. If some type of organization or structure is available the subject switches the nature of the activity carried out which influences the recall capability.

It seems that if subjects can be induced to actively interact with material presented them, they are more likely to remember that information. If they are presented with routes to retention they may well carry out less efficient activities in their memory attempts with some but not as much benefit.

We are currently involved in a number of studies attempting to more accurately delineate the types of activities which lead to efficient retention and the conditions under which these activities are maximally beneficial.

The findings regarding the serial position variable suggest that a definite primacy and perhaps recency effect are also to be found in prose materials which are not strongly sequential in nature. This would seem to indicate that as in serial learning with words the end points serve as anchor points for the reconstruction of the passage.

Footnotes

1. Request for reprints should be sent to Gary M. Schumacher, Department of Psychology, Ohio University, Athens, Ohio 45701.

References

Ausubel, D.P. The use of advance organizers in the learning and retention of meaningful verbal material. Journal of Educational Psychology, 1960, 51, 267-272.

Corsini, D.A. Memory: Interaction of stimulus and organismic factors. Human Development, 1971, 14, 227-235.

DiVesta, F.J. & Gray, G.S. Listening and note taking: II. Immediate and delayed recall as functions ofvariations in thematic continuity, note taking, and length of listening-review intervals. Journal of Educational Psychology, 1973, 64, 278-287.

Flavell, J.H. First discussant's comments: What is memory development the the development of? Human Development, 1971, 14, 272-278.

Frase, L.T. Cybernetic control of memory while reading connected discourse. Journal of Educational Psychology, 1969, 60, 49-55.

Freidman, M.P. & Greitzer, F.L. Organization and study time in learning from reading. Journal of Educational Psychology, 1972, 63, 609-616.

Hyde, T.S. & Jenkins, J.J. Recall for words as a function of semantic, graphic and syntactic orienting tasks. Journal of Verbal Learning and Verbal Behavior, 1973, 12, 471-480.

Mandler, G. Organization and memory. In K.W. Spence & J.T. Spence (Eds.) The psychology of learning and motivation: Advances in research and theory, Vol. I. New York: Academic Press, 1967.

Meacham, J.A. The development of memory abilities in the individual and society. Human Development, 1972, 15, 205-228.

Meyer, B.J.F. & McConkie, G.W. What is recalled after hearing a passage. Journal of Educational Psychology, 1973, 65, 109-117.

ıat, J., Inhelder, B. & Sinclair-De-Zwart, H. Memoire et intelligence. Paris: Presses Universitaires de France, 1968.

rnov, A.A. & Zinchenko, P.I. Problems in the psychology of memory. In Cole & Maltzman. A handbook of contemporary Soviet psychology. New York: Basic Books, 1969.

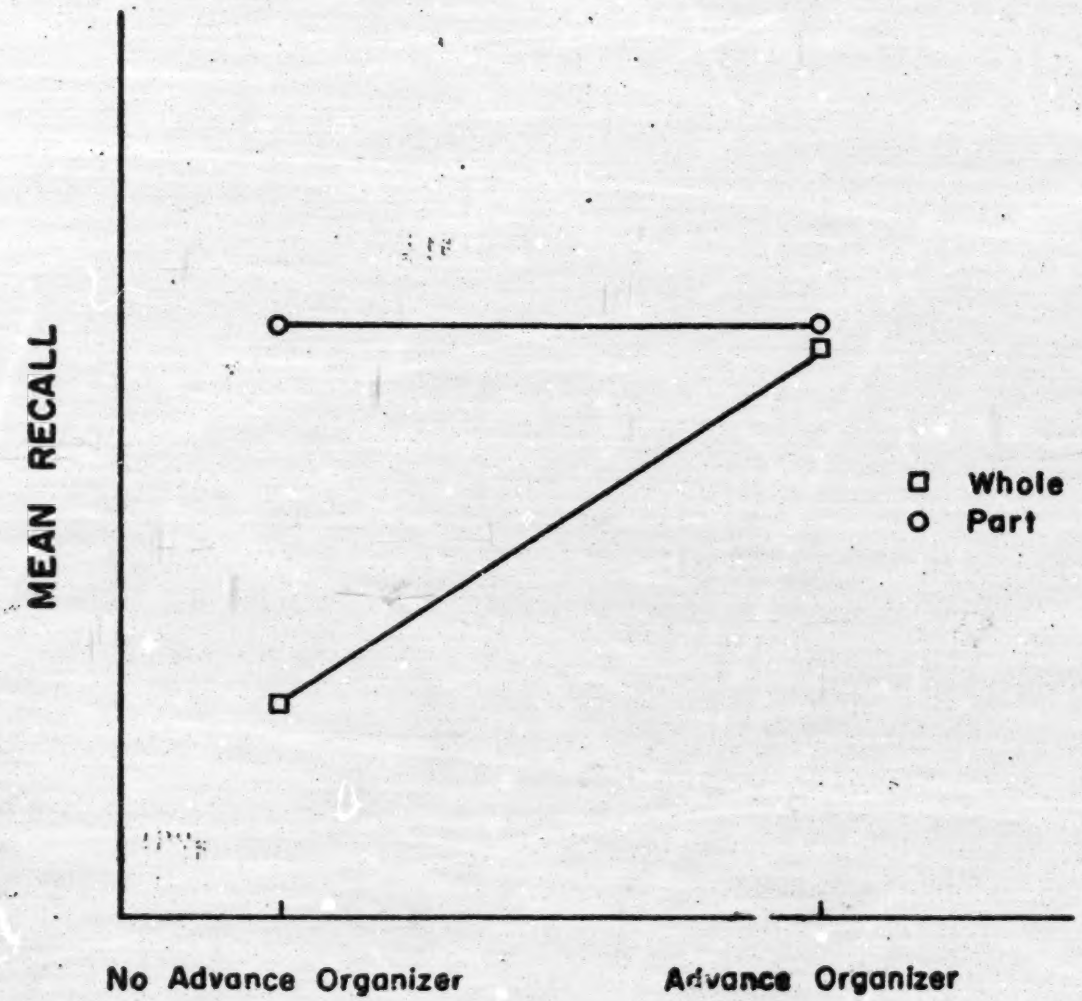

Figure 1. Predicted Interaction Between Advance Organizer and Passage Organization

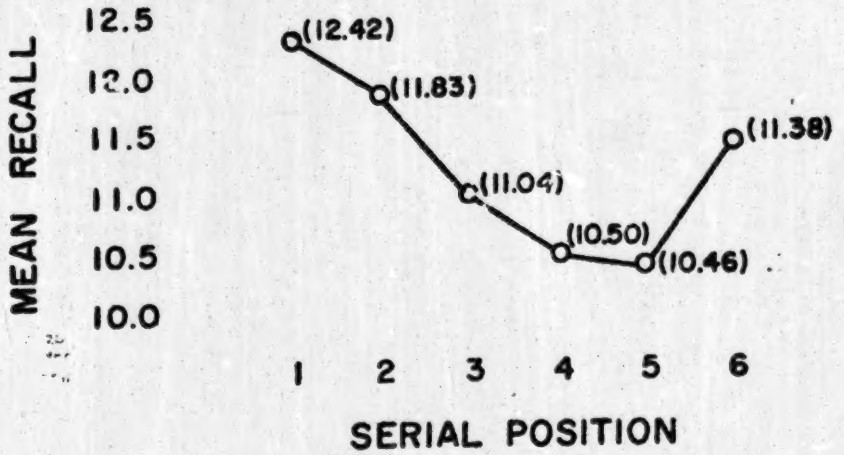

Figure 3. Serial Position for Recall Performance

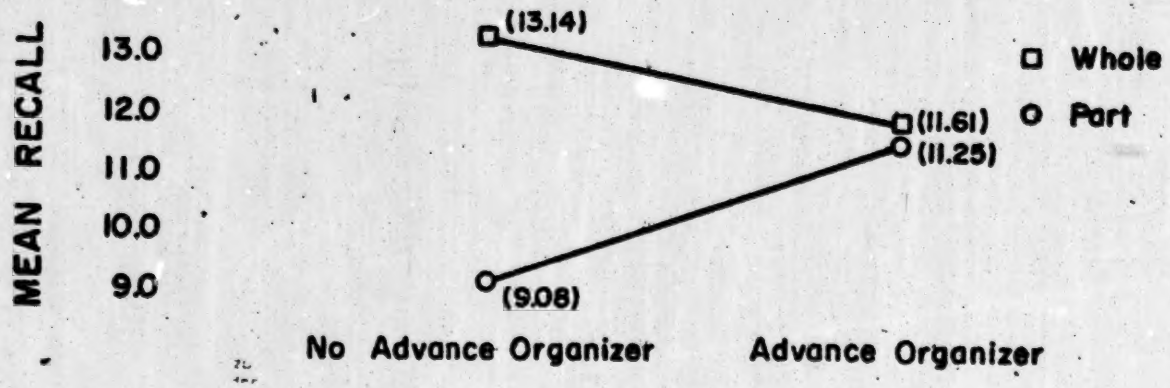

Figure 2. Interaction between Advance Organizer and Whole-Part Organization